

The Effects of Detoxification of Domestic Gas on Suicide in the United States

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Abstract: As domestic gas was detoxified in the United States, the rate of suicide by domestic gas decreased. During this time period (1950–60), there was a parallel increase in the per capita ownership of cars and an accompanying increase in the rate of suicide by motor vehicle exhaust. However, displacement of suicide method from domestic gas to car exhaust occurred only for males and not for females. (*Am J Public Health* 1990; 80:80–81.)

Introduction

It has been argued that the detoxification of domestic gas in England and Wales in the 1960s and early 1970s was responsible not only for a drop in the rate of suicide by domestic gas, but also for a drop of about one-third in the overall suicide rate.^{1,2}

However, it has also been noted that detoxification of domestic gas in Scotland and The Netherlands was not accompanied by a decrease in the overall suicide rate. Clarke and Mayhew³ have suggested that this reflected a rising suicide rate in Scotland and The Netherlands at the time of detoxification which masked any reduction made possible by the detoxification of domestic gas.

Lester⁴ has argued that, in the states of the USA where the availability of firearms is reduced by strict gun control laws, there is an accompanying reduction not only in the rate of suicide by firearms, but also in the overall suicide rate. Rich and Young⁵ have shown that in Toronto people switched from using firearms to jumping in front of subway trains, leaving the suicide rate unchanged.

Domestic gas in the United States contained carbon monoxide in the early part of this century. The carbon monoxide content was reduced gradually during the 1940s and 1950s as gas companies switched to natural gas. The present paper examines the relation of the detoxification of domestic gas with rate of suicide.

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During this same period, the per capita ownership of cars increased in the USA. The per capita ownership of cars in the states of America is positively associated with the use of car exhaust for suicide.⁶ The present paper, therefore, also explored whether people used car exhaust rather than domestic gas as a suicide method as the relative availability of these two methods for suicide changed.

Method

Data on the rates of suicide by domestic gas and motor vehicle exhaust were obtained from the annual volumes, *Vital Statistics of the United States*, published by the National Center for Health Statistics. Data on the percentage of customers receiving natural gas were obtained from the annual volume *Statistical Abstract of the United States*, published by the Bureau of the Census. Data on the number of cars per capita each year were obtained from *Historical Statistics of the United States from Colonial Times to 1970* published by the Bureau of the Census.

Data were obtained each year from 1946, the first year for which data on domestic gas customers could be obtained using a consistent set of categories, to 1970, by which time almost all domestic gas customers were receiving natural gas. Suicide by natural gas is possible, but since natural gas is less toxic, suicide is by the exclusion of air containing oxygen and is less apt to occur.

Results

Table 1 shows that the percentage of domestic gas customers receiving natural gas increased from 1950 to 1970 (regression coefficient = 22.75, standard error = 1.86), as did the number of cars per capita (regression coefficient = 8.90, standard error = 0.22). The accidental death rate from domestic gas was strongly and positively related to the percentage of customers receiving the toxic manufactured or mixed gas and with the rate of suicide by domestic gas.*

The rate of suicide by domestic gas decreased over the years (regression coefficient = -34.70, standard error = 4.12), while the rate of suicide by motor vehicle exhaust increased (regression coefficient = 29.45, standard error = 2.52). The sum of these two suicide rates remained constant

*Complete tables of data are available on request to author.

TABLE 1—Suicide Rates 1950–70, using Domestic Gas and Motor Vehicle Exhaust and the Extent of Use of Natural Gas by Consumers

	Cars per Capita	% of Customers Using Natural Gas	Suicide Rates per 100,000 per Year by:				Overall
			Domestic Gas	Motor Vehicle Exhaust	Total Gas/ Exhaust	All Other Methods	
1950	0.26	60.8	0.73	0.60	1.33	9.93	11.26
1955	0.31	81.6	0.19	0.74	0.93	9.17	10.10
1960	0.34	92.8	0.10	0.91	1.01	9.53	10.54
1965	0.39	98.0	0.08	1.09	1.17	9.90	11.07
1970	0.43	98.6	0.02	1.02	1.05	10.40	11.45

TABLE 2—Changes in the Suicide Rates 1950–70, by Method for Men and Women

	Suicide Rates by Men				Suicide Rates by Women			
	Motor Vehicle Exhaust	Domestic Gas	Total Gas	Other Methods	Motor Vehicle Exhaust	Domestic Gas	Total Gas	Other Methods
1950	1.09	0.85	1.94	15.75	0.12	0.61	0.73	4.32
1955	1.29	0.23	1.52	14.33	0.21	0.16	0.37	4.18
1960	1.55	0.13	1.68	14.78	0.29	0.07	0.36	4.59
1965	1.74	0.11	1.85	14.69	0.51	0.06	0.57	6.04
1970	1.48	0.03	1.51	15.30	0.61	0.01	0.62	5.95

during this period (regression coefficient = -3.81 , standard error 6.67). The rates of suicide by domestic and motor vehicle gas were negatively related ($r = -0.94$). The total suicide rate during this period did not change systematically (regression coefficient = 1.84 , standard error = 15.56).

The data were examined separately for men and women (Table 2). The use of domestic gas for suicide by men declined from 1950 to 1970 while the use of car exhaust increased. The use of both methods varied greatly from year to year, but the data suggest a slight decrease over the period. For women, the results are similar, except that the data suggest a drop in the use of domestic gas and car exhaust from 1950 to 1960 followed by a rise from 1960 to 1970.

Discussion

It has often been argued that removal of one lethal method for suicide will simply cause would-be suicides to turn to alternative methods.⁷ The present results indicate that as domestic gas was detoxified and as per capita ownership of cars increased, fewer people used domestic gas for suicide while more used motor vehicle gas for suicide.

The situation is considerably more complicated, of course. During this period (1950 to 1970), the availability and use of firearms for suicide was increasing,⁸ as perhaps was the availability of lethal medications such as antidepressants. Thus, as domestic gas became less toxic, several other methods for suicide became more available. This, together with the lesser use initially of domestic gas for suicide in the US as compared to England and Wales, is perhaps why

detoxification of domestic gas in the US had little impact on the overall suicide rate, while in England and Wales detoxification of domestic gas was accompanied by a one-third reduction in the overall suicide rate.⁷

The data are not clear on whether switching occurred from domestic gas to car exhaust as the relative availabilities of these methods changed. A case could be made for or against switching, depending upon which time period (1950–60 or 1960–70) and which sex is examined. Two important questions for future research are: “Which people will switch methods for suicide if one is made less available?” and “To which methods will people switch if one method is made less available for suicide?”

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NIA Funds Three New Alzheimer's Disease Research Centers

The National Institute of Aging (NIA) has announced funding of three new Alzheimer's Disease Research Centers (ADRCs), with \$2.3 million for the first year of operation and a total of \$11 million over the next five years. This brings to 15 the number of Alzheimer's centers funded by the NIA. The purpose of the ADRC program is to enhance research on Alzheimer's disease by providing the resources and environment for collaborative, multidisciplinary studies. Each center will serve as the site for new and expanded studies of the basic, clinical and behavioral aspects of Alzheimer's disease. In addition to their research mandate, the centers train scientists and health care professionals and offer consultation and education to Alzheimer patients and their families.

The three new centers are located at Baylor College of Medicine, Houston, Texas; Columbia University, New York City; and the University of Michigan, Ann Arbor.

The other 12 NIA-funded centers are located at: Duke University, Durham, NC; Harvard Medical School/Massachusetts General Hospital, Boston, MA; Johns Hopkins Medical Institutions, Baltimore, MD; Mt. Sinai School of Medicine/Bronx VA Medical Center, New York; University of California-San Diego, La Jolla, CA; University of Kentucky, Lexington, KY; University of Pittsburgh, Pittsburgh, PA; University of Southern California, Los Angeles; Case Western Reserve University, Cleveland, OH; University of Washington, Seattle, WA; Washington University, St. Louis, MO; and University of Texas, Southwestern Medical Center, Dallas, TX.